Supplementary Information

Distinct Nav1.7-dependent pain sensations require different sets of sensory and sympathetic neurons

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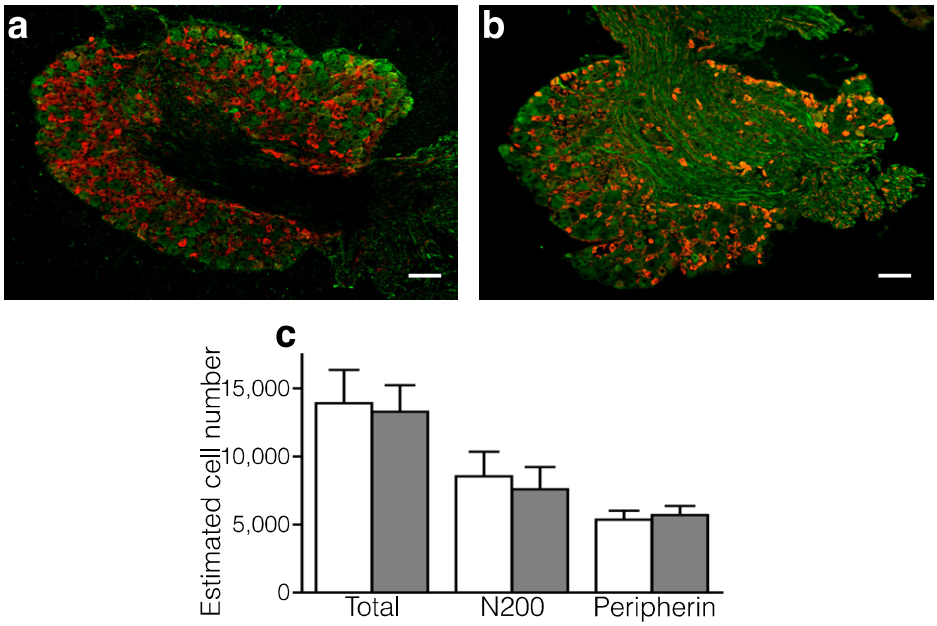
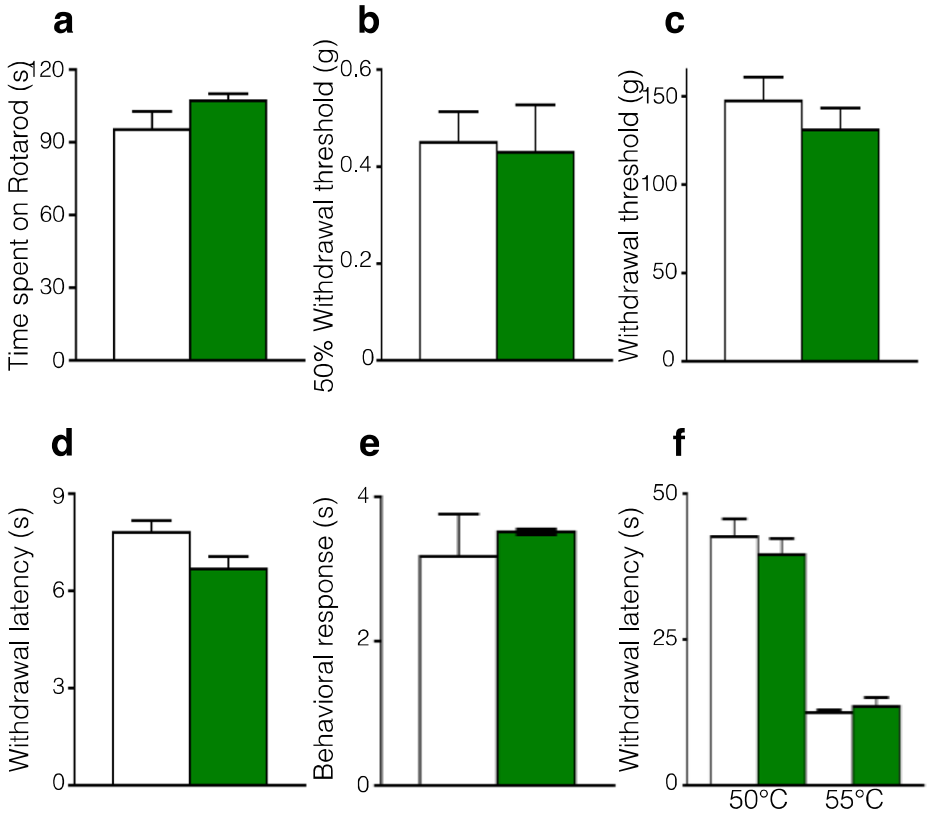
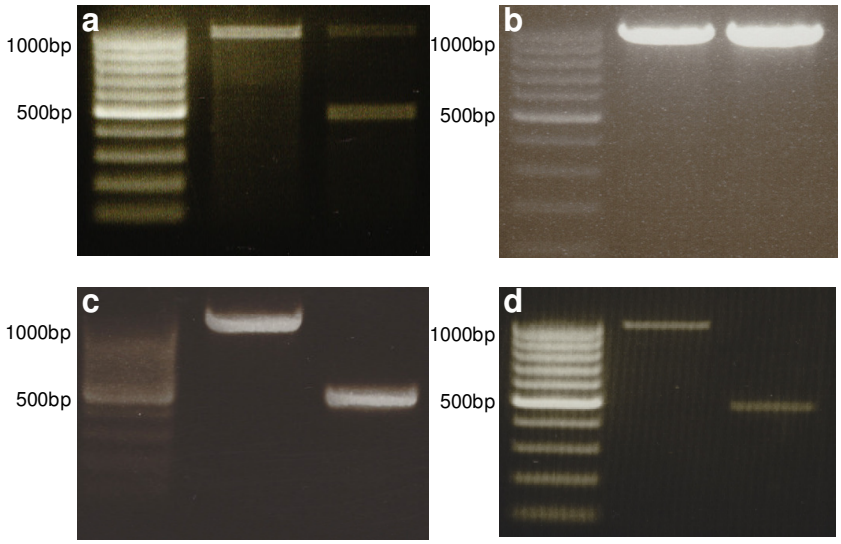
Supplementary Figures S1-S5



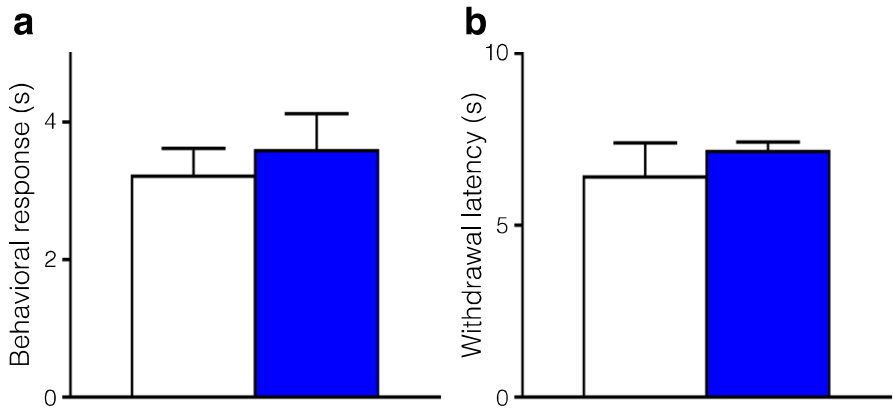
Supplementary Figure S1. DRG neuron profiles in heterozygous Advillin-Cre and littermate control mice. Examples of DRG (4th lumbar segment) sections from (**a**) wildtype littermate and (**b**) Advillin-Cre$^{+/-}$ positive mice (N200 – Green, Peripherin – Red, scale bar = 100µm). (**c**) Estimated total number of DRG neurons and N200 and Peripherin positive neurons within L4 DRG in Advillin-Cre positive (grey columns, N=3) and wildtype littermate (white columns, N=3) mice. All data analyzed by t-test. Results are presented as mean ± SEM.



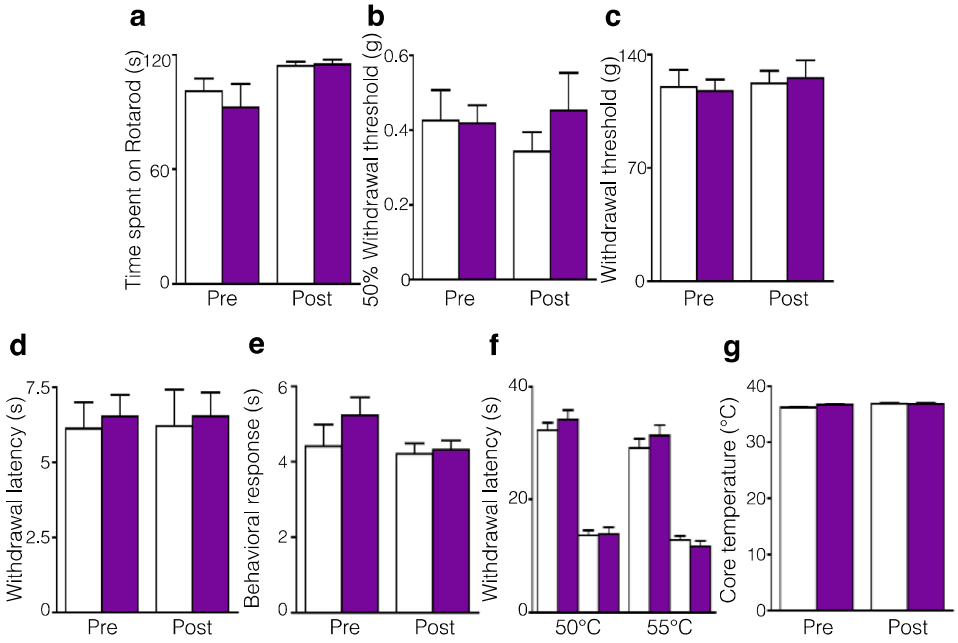
Supplementary Figure S2. Wnt1-Cre does not affect acute pain behaviour. *Wnt1-Cre* positive (green columns, N=7) littermate (white columns, N=5) mice. (**a**) Motor function: Rotarod test. (**b**) Light touch: von Frey test. (**c**) Mechanical pain: Randall-Selitto test. (**d**) Thermal (spinal withdrawal reflex): Hargreaves's test. (**e**) Noxious cooling: Acetone test. (**f**) Thermal (supraspinal): Hotplate test at 50℃ & 55℃. All data analyzed by t-test. Results are presented as mean ± SEM.



Supplementary Figure S3. Deletion of *SCN9A* exons 14 & 15 in *Nav1.7*^{Advill} and *Nav1.7*^{Wnt1} DRG and SCG. PCR was used to detect the presence of exons 14 & 15 in cDNA isolated from (**a**) DRG and (**b**) SCG from littermate (left) and *Nav1.7*^{Advill} (right) mice, and (**c**) DRG and (**d**) SCG from littermate (left) and *Nav1.7*^{Wnt1} (right) mice.



Supplementary Figure S4. *Nav1.7*$^{Nav1.8}$ mice show normal pain behaviours in response to the Acetone and Hargreaves' tests. (**a**) Noxious cooling: Acetone test *Nav1.7*$^{Nav1.8}$ (blue column, N=6) and littermate (white column, N=7) mice **(b**) Thermal (spinal withdrawal reflex): Hargreaves's test *Nav1.7*$^{Nav1.8}$ (blue column, N=14) and littermate (white column, N=10) mice. All data analyzed by t-test. Results are presented as mean ± SEM.



Supplementary Figure S5. Chemical sympathectomy induced by 6-OHDA does not affect acute pain behaviour. Wildtype mice treated with either 6-OHDA (purple columns) or vehicle (white columns) N shown as vehicle/6-OHDA treated. (**a**) Motor function: Rotarod test (N=6/4) (**b**) Light touch: von Frey test (N=12/10) (**c**) Mechanical pain: Randall-Selitto test (N=6/4) (**d**) Thermal (spinal withdrawal reflex): Hargreaves's test (N=6/4) (**e**) Noxious cooling: Acetone test (N=6/4) (**f**) Thermal (supraspinal): Hotplate test at 50 & 55℃ (N=12/10) (**g**) Rectal core body temperature (N=6/4). All data analyzed by two way ANVOA followed by Bonferroni post hoc test. Results are presented as mean ± SEM.